

INDIGENOUS CHILDREN'S CHLORPYRIFOS EXPOSURE IN BANANA AND PLANTAIN COMMUNITIES IN TALAMANCA, COSTA RICA

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Background and Aims: In Costa Rica, chlorpyrifos-treated plastic bags are used to protect the banana and plantain fruits from insects and to fulfil product standards. The aim of this study was to evaluate children's exposure to chlorpyrifos in communities situated nearby banana and plantain farms in Costa Rica.

Methods: The study was performed in three communities: in two, chlorpyrifos-treated bags were used in surrounding banana and plantain plantations whereas in the third community mostly not. In total, 140 children donated a urine sample of which forty on more than one occasion (n=207). TCPy levels were measured as a biomarker for chlorpyrifos exposure. Also environmental samples were taken.

Results: Children from the banana and plantain community had higher TCPy levels in urine than children from the organic community, GM=2.6; 2.2 and 1.3, respectively. In the plantain community boys had higher levels than girls, GM=2.9 versus 1.5 µg/g creatinine, p=0.01, whereas in the other communities levels were similar for both sexes. Children from the banana community were more homogenous exposed than children from the plantain community. In the banana and plantain community, chlorpyrifos was detected in several environmental media, including children's (n=12) hand and footwash samples. Median estimated values of the Absorbed Daily Dose of children from the banana and plantain community was five times the chronic US-EPA established reference doses (RfD).

Conclusions: Children living in the vicinity of plantations that use chlorpyrifos-treated bags are being exposed and at risk for overexposure. Measures are required to reduce this exposure.